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ABSTRACT

A study investigated the role of metacognitive skills and the conception of reading in the reading comprehension of adult native speakers of Spanish and English. The study differed from others in its examination of reading conceptions and comprehension in both the first and second languages. Results suggest that both first language reading ability and second language proficiency have significant effects on second language reading ability. However, for the native Spanish speakers, first language reading ability accounted for a greater proportion of the variance in second language reading ability than did second language proficiency, while for the native English speakers, the influence appears to be reversed. Results concerning metacognitive skills were suggestive but not conclusive. Some second language readers may need relatively more help with basic reading skills or second language skills to succeed in second language reading, and formal metacognitive instruction for monitoring or regulating comprehension or for developing effective and efficient reading strategies is advisable. (MSE)

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SECOND LANGUAGE READING: READING, LANGUAGE AND METACOGNITION

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Abstract

The extent to which reading in a second language is a function of the transfer of first language reading abilities or of language proficiency in the second language has been a matter of debate for some time (Clarke, 1979, 1980; Alderson, 1984). Although studies of this question have been carried out, as Alderson observes "the major problem in the design of many studies has been that they have failed to gather sufficient relevant information: what is needed is at least information on reading ability in the first language...; information of the reading ability in the foreign language; and information about the level and ... the nature of the foreign language proficiency of the same individual..." (1984, p. 21).

Separate studies of first (Baker & Brown, 1984) and second (Devine, 1984) language reading have also investigated the role of metacognitive skills and the reader's conception of the reading process. None of these studies has investigated the same individuals' conceptualizations about reading in both their first and second languages.

The study reported in this paper investigated all of these variables in a single study of first and second language reading in both Spanish and English. The reading comprehension of adult native speakers of Spanish and English who were foreign or second language learners of the other language at different proficiency levels was investigated in both their first and second language. In addition, they were questioned about their conceptions of reading in both their first and second language. Results are reported in terms of second language reading as a function of first language reading ability, second language proficiency, and metacognitive factors.

Background literature - on Second Language Reading as a Function of First Language Reading and Second Language Proficiency

In 1984, in the title of a book chapter, Charles Alderson raised the question "Reading in a foreign language: A reading problem or a language problem?" Extant research points in both directions. Some researchers argue that reading in a foreign or second language depends crucially upon the reading ability in one's first language rather than upon the student's level of ability in the second language (Jolly, 1978, as referred to in Alderson, 1984; Coady, 1979). In this view, students who read poorly in a second language do so either because they do not possess good reading skills in their L1, or because they fail to transfer them. These researchers argue that higher-level processing skills may be transferred to a second language and may, in fact, compensate for inadequacies in lower-level linguistic skills (Coady, 1979; Hudson, 1982; Sarig, 1987). Another group of researchers argues that reading ability in a second language appears to be largely a function of proficiency in that language, or that at least some minimal threshold of proficiency needs to be attained in that language before good readers first language reading strategies can be transferred to reading in the second language (Clarke, 1979; Cziko, 1980; Cummins, 1979; Devine 1987; Macnamara, 1970). This is the now well-known "language-threshold" or "language-ceiling" or "short-circuit hypothesis" of second language reading.

However, as Alderson points out, methodological shortcomings in the extant studies have limited our ability to address this question directly. Some studies, for example, Ulijn (1978) and Ulijn and Kempen (1976) have investigated first and second language readers of a particular language, in this case French (native French speakers and Dutch students reading French), and concluded that:

"Under normal conditions reading comprehension is little dependent on a syntactic analysis of the text's sentences. It follows that second language reading comprehension is possible without mastery of the contrasting parts of the second language's syntax. Usually, the reader's conceptual knowledge will compensate for the lack of knowledge about linguistic contrasts between L1 and L2" (1976, p. 499).

However, as Alderson points out, Ulijn and Kempen came to this conclusion without studying the same subjects reading in both their L1 and L2.

Clarke's (1979) well-known study compared the reading of the same subjects in their first and foreign language, Spanish and English, respectively. Clarke found that some good first language reading strategies failed to transfer to the L2, and suggested that this was due to limitations of proficiency in their second language -- English. But because he used subjects all at approximately the same level of EFL proficiency, we cannot tell precisely what role proficiency in the second language plays in this "short-circuit."

As Alderson points out, investigation of this question requires examining the first and second language reading of the same individuals, and, based on the criticism of Clarke, should include subjects exhibiting a range of proficiency levels in the second language.

Background literature - on Second Language Reading as a Function of Metacognition

Since the 1970's there has been no shortage of L2 learning theorists advocating teaching students to use a variety of reading strategies or skills in order to read better (Zvetina, 1987; Loew, 1984; Woytak, 1984; Phillips, 1984; Schulz, 1984; Aspatore, 1984; Grellet, 1981; Omaggio, 1984; Hosenfeld, Arnold, Kirchofer, Laciura & Wilson, 1981). These strategies run the gamut from the

traditional skills of skimming, scanning, contextual guessing or skipping unknown words, tolerating ambiguity, reading for meaning, critical reading, making inferences, to more recently recognized skills such as building and activating appropriate background knowledge (Zvetina, 1987), and recognizing text structure (Block, 1986). Less common have been empirical investigations into the reading strategies actually used by successful and unsuccessful second language learners (Hosenfeld, 1977; Hauptman, 1979; Knight, Padron, & Waxman, 1985; Block, 1986). In exploratory, descriptive studies of small numbers of individual learners using think-aloud techniques, both Hosenfeld (1977) and Block (1986) identified apparent relations between certain types of reading strategies and successful or unsuccessful foreign or second language reading. (For example, Hosenfeld's successful reader kept the meaning of the passage in mind during reading, read in "broad phrases," skipped words viewed as unimportant to total phrase meaning, and had a positive self-concept as a reader. By contrast, Hosenfeld's unsuccessful reader lost the meaning of sentences as soon as they were decoded; read in short phrases, seldom skipped words as unimportant, viewing words as "equal" in terms of their contribution to total phrase meaning, and had a negative self-concept as a reader. Block found that four characteristics seemed to differentiate proficient from nonproficient readers: (1) integration, (2) recognition of aspects of text structure, (3) use of general knowledge, personal experiences and associations, and (4) response in extensive versus reflexive modes.) As descriptive case studies, neither Hosenfeld nor Block investigated these relationships with larger numbers of subjects or with experimental research designs. Also, with the exception of a couple of strategies identified by Block (e.g., "comment on behavior or process," "monitor comprehension," and "correct behavior"), this research has been limited to strategy use, and has not investigated readers'

awareness of strategies, their metacognitive awareness.

In first language reading, Brown and her collaborators (e.g., Baker & Brown, 1984) have investigated several different aspects of the relationship between metacognitive skills and effective reading. Little, if any, similar research has been done in second language reading.

Two dimensions of metacognitive ability are (a) knowledge of cognition, and (b) regulation of cognition (Flavell, 1978). The former, i.e., knowledge of cognition, includes the reader's knowledge about his or her own cognitive resources, and the compatability between the reader and the reading situation. If a reader is aware of what is needed to perform effectively, then it is possible to take steps to meet the demands of a reading situation more adequately. If, however, the reader is not aware of his or her own limitations as a reader or of the complexity of the task at hand, then the reader can hardly be expected to take preventive actions in order to anticipate or recover from problems.

Related to this first aspect of metacognition is the reader's conceptualization of the reading process: how the reader conceptualizes what he/she is doing in reading. Devine (1984) has investigated second language readers' conceptualizations about their reading in a second language. Analysis of transcripts of reading interviews provided evidence of beginning ESL readers' theoretical orientations toward reading in their second language. "Depending on the language units they professed to focus on or indicated they considered important to effective reading, the subjects were classified as sound-, word-, or meaning-orientated ..." (Devine, 1984, p. 97). Further, Devine found that meaning-centered readers demonstrated good to excellent comprehension on a retelling task from an oral reading, while sound-centered readers were judged to have either poor or very poor comprehension (1984, p. 104). However, we do not know whether second language readers conceptualize

what they are doing in the second language in the same way they do when reading in their first language.

The second dimension of metacognition, i.e., the regulation of cognition, includes monitoring and deploying compensatory strategies. Effective monitoring of reading is essential; failure to monitor can lead to serious reading problems. And, of course, having compensatory strategies available when problems are encountered is also essential to effective reading.

Thus, if we divide this second aspect of metacognition into "monitoring" and the "deployment of compensatory strategies," we can recognize three main types of metacognitive skills: awareness, monitoring, and deployment of compensatory strategies.

According to Brown (1980), some of the general metacognitive skills involved in reading are: (a) clarifying the purposes of reading, that is, understanding both the explicit and implicit task demands; (b) identifying the important aspects of a message; (c) focusing attention on the major content rather than trivia; (d) monitoring ongoing activities to determine whether comprehension is occurring; (e) engaging in self-questioning to determine whether goals are being achieved; and (f) taking corrective action when failures in comprehension are detected. To summarize and oversimplify a vast body of research in first language reading and metacognition, "young children and poor readers know less and have more misconceptions about important characteristics of cognition than do older children and good readers, respectively." (Garner, 1987, p. 61) We know very little about metacognitive factors in second language reading.

This Study

The purpose of this study was to combine in a single study, investigation

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of the effects on second language reading of all of the following: (1) reading ability in the first language, (2) level of language proficiency in the second language, and (3) metacognitive factors, specifically various aspects of reader's conceptualizations about reading strategies in their first and second language.

The design of the study may be summed up by the following equation:

L2 Reading = L1 Reading + L2 Language Proficiency + Metacognition

It was hypothesized, based on the previous research, that, individually, both L1 reading ability and L2 language proficiency would both play a significant role in L2 reading ability. What wasn't known was whether both would be significant when taken together, or whether only one or the other would be significant. It was also hypothesized that by themselves, metacognitive factors concerning reader's conceptualizations about effective reading strategies should play a role in L2 reading. But it was not known whether or to what extent these metacognitive factors would be significant over and above the factors of L1 reading ability and L2 language proficiency.

Method

Subjects. Two groups of subjects participated in this study, Group 1 consisted of 45 native speakers of Spanish, from various countries, predominantly in Central and South America [Honduras (12), Colombia (12), Venezuela (5), Panama (4), Spain (3), Ecuador and Costa Rica (2 each), and 1 each from El Salvador, Nicaragua, Puerto Rico, Peru, and Chile]. These subjects were studying in the U.S.A., at Southern Illinois University at Carbondale, and were of different proficiency levels in English. Some were at intermediate and advanced levels at the Center for English as a Second Language, the intensive program on campus; others were already admitted into the university and were taking English composition in special sections for

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foreign students.

Group 2 consisted of 75 native speakers of English studying Spanish at Southern Illinois University. They were at three different proficiency levels of study, in first year, second year and third year Spanish classes. Figure 1 shows the levels and N-sizes for each group.

See Figure 1

As will be noted in Figure 1, in attempting to equate the two groups in terms of their overall level of proficiency in the second language, it was determined that the two groups matched only at levels 3 and 4. Proficiency levels were determined in consultation with the respective second language instructors of these students, using the English Proficiency Chart produced by the Consortium on Intensive English Programs (CIEP) as a reference point.

Materials. Two different types of materials were prepared for this study: reading texts and comprehension questions, on the one hand, and metacognitive questionnaires, on the other.

Reading Texts. Two reading passages in each of the two languages (Spanish and English) were prepared. See Figure 2 for an overview of the four texts.

See Figure 2

In order to control for any effects of content, all four texts were on the general topic of "language." It was felt that, since both groups of subjects were engaged in second or foreign language study, this topic domain should

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prove equally relevant and interesting to all subjects, and that keeping the general topic constant for all texts would minimize effects of different contents and readers' content schemata. The texts originated as authentic texts in publications such as U.S. News & World Report and Dos Mundos, a bilingual newspaper. In all cases, however, in order to further control the texts for any effects of rhetorical organization, length, and syntactic complexity or so-called "readability," the original texts were edited. Texts were approximately equal in length, varying between 315 and 344 words. One text in each language was structured with a problem/solution (P/S) rhetorical organization, the other with a comparison/contrast (C/C) organization. In each text, an introductory paragraph introduced the topic; a second paragraph presented either one view if the text was C/C, or presented a problem and its causes if the text was P/S; a third paragraph presented either an opposing view if the text was C/C, or presented solutions if the text was P/S; a final paragraph presented a conclusion. In order to allow us to ask questions about the author's perspective, author's perspective was made clear. In the P/S texts it was clear that the author felt that the problem was indeed a significant problem and that the solutions presented provided viable options. In the C/C texts the author's position on the two opposing views was made clear, not only in the concluding paragraph, but through the way the two opposing views were presented. For example, in the text "Is English Degenerating?" one set of views, that English was badly degenerating, was attributed to "alarmists," but it was made clear in the text that the author did not agree with the alarmists, but rather took the opposite view that the language was changing but not degenerating.

Since we would be testing a range of proficiency levels in the second language, and presumably a range of reading ability levels, even in the first language, we wanted to have at least one of the two texts in each language be

relatively easy and the other relatively more difficult in terms of lexical and syntactic complexity. Therefore, the texts were controlled for these aspects of "readability." The grade level of each text according to the Fry (1977) readability graph is reported in Figure 2. [1]

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1 Readability grade levels for the Spanish texts were based on an adaptation of the Fry graph for Spanish by Gilliam, Pena, and Mountain (1980). Essentially only syllable length, not sentence length, is adjusted, and a correction factor of -67 syllables is employed when using the Fry graph for 100-word samples of Spanish. See Klare (1984) for a discussion of this adaptation of Fry.

Ten multiple-choice comprehension questions were developed for each text. The questions intentionally avoided testing "matching" information from the text, and instead called for the drawing of inferences, saying which statements were not true based on the text, and identifying the author's position. Distractors were plausible alternatives if one had not read the text or understood the arguments made in the text. The questions were intended to tap deep levels of text processing, based on careful reading and thorough comprehension of the text.

Metacognitive Questionnaires. A questionnaire was developed to elicit relevant demographic information from subjects, as well as to tap their metacognitive conceptualizations about silent reading strategies in both their native and second language. Thus, of the three types of metacognitive skills mentioned earlier --- awareness, monitoring, and the deployment of compensatory strategies --- the questionnaire constructed for this study falls into the area

of "awareness."

Using a 1-5 Likert Scale, 1=strongly agree, 5 = strongly disagree, subjects responded to 36 statements about silent reading strategies in the language in question, English and Spanish. See Figure 3. Items on the

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See Figure 3

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questionnaire included (1) statements pertaining to subjects' abilities in reading in that language --- to provide a measure of their confidence as readers in that language; (2) statements pertaining to what they do when they do not understand something --- to provide a measure of their awareness of repair strategies; (3) statements about what they focus on in order to read more effectively and about reading behaviors of the best readers they know -- all of these to tap their perception of effective/efficient strategies; and finally (4) statements about things which may make reading in that language difficult for them. Within the latter two categories of item-types, i.e., measures of effective strategies and difficulty, individual items focused on various types of reading strategies: (1) phonetic, pronunciation, or sound-letter aspects of decoding; (2) word-level aspects of meaning; (3) sentence, syntactic decoding; (4) details of text content; (5) global aspects of textual meaning, or text-gist; (6) background knowledge; and (7) textual organization. All of these strategies had been suggested in the literature as types of reading strategies related to reading comprehension (Devine, 1984; Hosenfeld, 1977; Block, 1986; Baker & Brown, 1984; Brown, 1980).

The original questionnaires were prepared in English and then translated into Spanish. In order not to have level of language proficiency in the second language affect results on the metacognitive questionnaires, subjects received the questionnaires in their native language.

Procedures. Subjects were tested in two separate sessions, with the second language tasks presented in session 1, and the native language tasks presented in session 2. Each session consisted of the subject reading first one of the two texts in that language (order of the two texts was systematically varied), answering the multiple-choice comprehension questions about that text, next doing the same with the second text, and then finally answering the metacognitive questionnaire about reading in that language. While answering the questions, subjects could refer back to the text if they wanted. Each session took about 40-50 minutes in the second language; about 15-25 minutes in the native language.

Analyses. Data in the study consisted of the answers to the multiple-choice comprehension questions and the responses to the metacognitive questionnaires. Statistical analyses were performed with the SAS package of statistical programs on Southern Illinois University's IBM 3081-370 computer, using the General Linear Models and Correlation procedures. An alpha level of

by n.s.; significant results have the exact probability levels reported.

Results

Analysis of Multiple-Choice Questions - First and Second Language Reading

Descriptive statistics for each group of readers, native Spanish and native English, reading the texts in each language, English and Spanish, are reported in Table 1. Tabled numbers are the mean scores averaged over both texts in each language, maximum score of 10.

See Table 1

Inspection of Table 1 shows the expected significant interaction between groups and texts and the GLM procedure bears this out ($F = 145.32$, $p = .0001$). Thus, the native Spanish readers performed significantly better on the Spanish texts than on the English texts, and the native English readers performed significantly better on the English texts than on the Spanish texts. There was no significant effect for group; i.e., there were no differences between the Spanish L1 subjects and the English L1 subjects, overall. However, there was also a significant effect for text ($F = 65.75$, $p = .0001$), revealing that, overall, the Spanish text was more difficult for all the subjects than the English text. The reason for this result can readily be seen in Table 1, namely it is due to the low performance of the native English speakers reading in Spanish, when compared with the performance of the native Spanish speakers reading in English. In other words, the English speakers are, overall, not as proficient in reading in Spanish as their second language as the Spanish speakers are in reading English as their second language. This may be due to the fact that proficiency levels overall for the native English speakers were lower (levels 2, 3 and 4) than for the native Spanish speakers (levels 3, 4 and 6).

The significant effect for text, and the non-comparability of the proficiency levels across groups dictated that for further analyses, the groups be analyzed separately. (Some of these differences may reflect the fact that the native Spanish group was a second language group, while the native English group was a foreign language group, with the concomitant differences in the availability of the second/foreign language in the environment for support of classroom learning, and the amount of contact with the language outside the classroom. More will be said about this later.)

In order to test the separate effects on second language reading ability

of both reading ability in the first language, and proficiency in the second language, separate simple regression models were run for each effect.

To test for the effect on second language reading ability of reading ability in the first language, the following simple regression model was run for each group:

L2 Reading = L1 Reading

Results were statistically significant for each group:

Group 1, Spanish L1, $F = 16.52$, $p = .0002$ ($r = .53$, $r2 = .28$);

Group 2, English L1, $F = 8.73$, $p = .0042$ ($r = .33$, $r2 = .11$).

Thus, support has been found for the view that second language reading is a function of first language reading.

In order to test the separate effect of proficiency level in the second language on reading in the second language, the following simple regression model was run for each group:

L2 Reading = L2 Proficiency Level[2]

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[2] In all analyses the L2 Proficiency Level variable has been treated as a continuous variable; results are only trivially different if L2 Proficiency Level is treated as a dichotomous variable. However, even though it is limited in its range, I believe it logically preferable to treat the L2 Proficiency Level variable as continuous rather than dichotomous.

Results of this analysis were also statistically significant for each group:

Group 1, Spanish L1, $F = 5.40$, $p = .0249$ ($r = .33$, $r2 = .11$);

Group 2, English L1, $F = 72.52$, $p = .0001$ ($r = .71$, $r2 = .50$).

Thus, support has been found for the view that second language reading is a function of overall level of proficiency in the second language.

The next interesting question, and the reason for the design used in this

study, is to put both reading ability in the first language as well as proficiency level in the second language into the same regression formula and see whether one or the other or both are significant when taken together:

L2 Reading = L1 Reading + L2 Proficiency Level[3] (cf. Table 2)

See Table 2

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[3] The F-values reported in Table 2 are based on Type III sums of squares, the partial sums of squares. These sums of squares are the contribution of each effect over and above that provided by all other effects in the model, as if each effect were the last one entered into the model. This makes the F-values independent of the order in which the effect occurs in the model. In other words, they are the most conservative F-values for the effect in question, after the variance due to the other effects is controlled for.

Again, results were significant for both effects for each group. Thus, taken together, both first language reading ability and second language proficiency level have significant effects on second language reading ability.

Results - Metacognitive Questionnaires

The 36 items on the metacognitive questionnaire may be and have been subjected to a number of different analyses, but the basic one of interest is the relationship between the subjects' metacognitive conceptualizations about reading in the language in question and their reading performance in that language. In other words, what is the relationship between readers' perceptions about their abilities (i.e., their confidence), their perceptions

about repair strategies, and their perceptions about effective strategies or things which cause them difficulty, on the one hand, and their reading ability in that language, on the other? What is the relationship between their metacognitive perceptions about reading in that language and their reading ability in that language; to what extent is reading ability related to reader conceptualizations?

L1 Reading = L1 Metacognition

L2 Reading = L2 Metacognition

To test these questions, separate simple regressions were run for each group of subjects, looking at the four different categories of metacognition (Confidence, Repair, Effective, and Difficulty) and subjects' reading in both their first and second languages. Results are reported in Table 3.

See Table 3

For reading in the first language, these results reveal that no confidence items or repair strategies were significantly related to reading performance in for either group. Further, for Group 1, the more subjects tended to disagree with statements about particular types of strategies as being effective for reading in that language, the better their reading performance. For example, if they tended to disagree with statements such as "When reading silently in Spanish, the things I do to read effectively are to focus on 'understanding the meaning of each word,' 'mentally sounding out parts of words,' 'the grammatical structures,' 'the details of the content,' then they tended to be better readers in that language. Finally, if they tended to disagree that sound-letter information or grammatical structure were things that made reading difficult, then they also read significantly better. Thus, to put it positively, if they tended to agree that what we might characterize

as "local" reading strategies were not particularly effective, but also did not cause them particular difficulty, then reading performance tended to be better. Group 2 showed some of these same tendencies with regard to "local" reading strategies, but not to the same extent as Group 1. Interestingly, what we might characterize as the more "global" types of reading strategies, e.g., text-gist, background knowledge, and text organization, were not significantly related to first language reading performance in either group.

For reading in the second or foreign language some of the confidence and repair strategies emerge as significantly related to reading performance. For Group 1, if subjects tended to agree with the statement that they are able to recognize the difference between main points and supporting details, they tended to perform better in reading English as their second language. For Group 2, if subjects tended to agree with the statement that they are able to question the significance or truthfulness of what the author says they tended to perform better in reading in Spanish as a foreign language. For both groups, the more subjects tended to disagree with the statement that when they don't understand something they give up and stop reading, the better they tended to perform in reading the second language. This result is reminiscent of Hewett's (1983, 1986) finding that readers who rate themselves as being more reflective than impulsive achieved significantly better second language reading scores, and that persistence is a significant component of reflectivity.

In the category of things that make reading in the second language difficult, sentence syntax emerges as significant for Group 2, the same as it did for Group 1 for reading in the native language. Interestingly, for Group 1, the more subjects tended to disagree with the statement that relating the text to what they already know about a topic, to their background knowledge, caused difficulty, the better they tended to read.

The relationships between what are perceived to be effective strategies and the effectiveness of the reading are not as clear for the second language situation as they were for the first language situation. Reading for details of content (for Group 1) and sound-letter correspondences (for Group 2) are both negatively related to reading performance, as they were for the first language situation. However, for Group 2, word meaning and sentence syntax are both positively related to reading performance; that is, the more subjects tended to agree that these "local" reading strategies were effective for their reading in Spanish as a foreign language, the better their reading.

To further explore the distinction between "local" and "global" strategies in subjects' metacognitive conceptualizations and their reading comprehension in the language in question, both groups of subjects were dichotomized on the basis of their responses to the effective and difficulty items on the questionnaire. For the 17 items relating to "effective" strategies, the 11 items relating to sound-letter, word-meaning, sentence syntax and text details were classified as "local" items; the remaining 6 items relating to background knowledge, text gist, and textual organization were classified as "global" items. For the 8 items relating to "difficulty" of strategies, the 5 items relating to sound-letter, word-meaning, and sentence syntax were classified as "local" items; the remaining 3 items relating to background knowledge, text gist, and textual organization were classified as "global" items. Subjects whose average responses to "effective" items showed them to agree to a greater extent that "global" rather than "local" strategies were effective were classified as "global;" otherwise they were classified as "local." Similarly, subjects whose average responses to "difficulty" items showed them to agree to a greater extent that "global" strategies caused them less difficulty than "local" strategies were classified as "global;" otherwise they were classified as "local." Next, separate general linear models were

run, by group, testing for effects on the reading comprehension test in the language in question due to the difference between "global" and "local" readers on both "effective" and "difficulty" items. See Table 4.

See Table 4

For reading in the first language, there was a significant effect for Group 2 on the "effective" items. These results must be interpreted cautiously, however, since the dichotomization of the subjects resulted in only one subject being classified as "local;" all 74 of the others were classified as "global." However, the mean score on the reading comprehension test of the 74 "global" subjects was M = 8.89; the score of the sole "local" subject was 6.50, suggesting that those who perceive the more global reading strategies as being more effective read better in English as their first language than do those who perceive the more local reading strategies as being effective.

For reading in the second/foreign language there was a significant effect for Group 1 on the "difficulty" items. The mean score on the reading comprehension test of the 18 "global" subjects was M = 7.97; the mean score of the 27 "local" subjects was M = 6.63, suggesting that those who perceive the more global reading strategies as posing less difficulty for them read better in English as their second language than those who perceive the more local reading strategies as being difficult.

Results - All Variables

The ultimate question of interest in this study is to what extent second language reading is a function of first language reading ability, second language proficiency, and metacognitive factors, taken all together. See the

model statement given earlier:

L2 Reading = L1 Reading + L2 Proficiency Level + Metacognition

However, due to the complex nature of the results with the metacognitive data, and the lack of sufficient robust effects with these data, they should not simply be added into an already complex equation. Before adding any metacognitive variables to an already complex regression analysis, and in order to be able to interpret the results which would emerge from such an analysis, one would want to have a better grasp on the nature of the separate contributions of metacognitive variables to reading in the second/foreign language. Additional study of metacognitive factors in second/foreign language reading is, therefore, needed.

Discussion

Based on the results given in Table 2, both first language reading ability and second language proficiency are seen to have significant effects on second language reading ability. However, what turned out to be extremely interesting in this study is the relative importance of each of these factors for each of the two groups studied. For the group with Spanish as their native language and English as their second language, relatively speaking, reading ability in the first language accounted for a greater proportion of the variance in second language reading ability than did proficiency in the second language. For the group with English as their native language and Spanish as their foreign language, again relatively speaking, proficiency in the foreign language accounted for a greater proportion of the variance in second language reading ability than did reading ability in the first language.

What this suggests is that, while both factors -- first language reading ability and proficiency in the second language -- may be significant in second language reading, the relative importance may be due to other factors about the

learner and the learning environment. One possibility, touched on above, is that the difference between the environments of these two groups of learners, namely that one was a "second" language setting, with the non-native language available in the surrounding environment, while the other was a "foreign" language setting in which the non-native language was not generally available in the surrounding environment, may be responsible for the difference in relative importance of the two factors. However, we cannot rule out other possible explanations. One other area to consider for explanation might be potential differences in directionality of the learning (English to Spanish versus Spanish to English). Another might be differences in absolute level of proficiency in the second language; it may be that proficiency level is more critical for learners at slightly lower levels (as would be true for the English L1 group in this study, who were determined to be at Levels 2, 3 and 4) when compared to learners at slightly higher levels (as would be true for the Spanish L1 group in this study, who were determined to be at Levels 3, 4 and 6). This last potential explanation, would, of course, fit with the views of the "language threshold" researchers mentioned at the beginning. These may all be factors, and there may be other possible explanations, as well. Until further research of this type is done, further controlling and/or manipulating some of these variables, the explanation remains open.

The metacognitive results are suggestive, but not definitive. In many ways, this study is a first of its kind, and additional studies of metacognitive factors in second language reading need to be conducted. Previous studies of reading strategies have focused on the strategies and not on reader's awareness of the strategies (cf. Block, 1986; Hosenfeld, 1977). And where metacognitive strategies have been touched on -- for example, in the Block (1986) study, several metacognitive strategies were identified (e.g., (7)

"commenting on behavior or process," (8) "monitoring comprehension," and (9) "correcting behavior") --- they are not mentioned in the results section as appearing to relate to reading proficiency. Furthermore, previous studies of second language reading strategies (Block, 1986; Hosenfeld, 1977) and of readers' conceptualizations (Devine, 1984) and their relation to reading proficiency have tended to be case studies, with small numbers of subjects, using think-aloud or interview techniques which may tend to be highly selective of just those subjects who are readily able to master the think-aloud technique and to introspect and articulate about their reading behavior. The data in such studies tends to be implicitly and subjectively discovered in the open-ended data provided by subjects, via post hoc analysis. The questionnaire method used in this study complements those earlier studies by lending itself to cross-sectional research designs with large numbers of subjects, and has the advantage of being constructed a priori and scored explicitly and objectively.

Implications of this Study

Given the results of this study, what are its pedagogical implications? First, since the two groups of subjects showed differences in second language reading ability of the relative strength of the effects of first language reading ability and second language proficiency, both of these factors need pedagogical attention. Some readers, especially foreign language readers, may need relatively greater help with second language skills in order to transfer their good reader skills from their native language; other readers, especially second language readers, may need relatively greater help with basic reading skills, regardless of the level of their proficiency in the second language.

Finally, given that students tend not to receive much formal instruction in any metacognitive skills, either in monitoring or regulating their comprehension, much less in becoming aware of what the various reading strategies

are, or which strategies are effective and efficient, there is need for such instruction, as well. Several first language researchers have advocated metacognitive training, especially metacomprehension training in reading, with the goal of teaching individuals how to adjust their cognitive activity in order to promote more effective comprehension (Gavelek and Raphael, 1985; Brown, Campione & Day, 1981). In second language, Bialystok and Ryan have also advocated "A Metacognitive Framework for the Development of First and Second Language Skills" (1985). Brown, Campione and Day (1981), for example, see the main aim of such instruction as getting the students to understand the interactive nature of reading, and the active role played by the reader. I'll conclude with a quote from them:

"What we are advocating is an avoidance of blind training techniques and a serious attempt at informed, self-control training, that is, to provide novice learners with the information necessary for them to design effective plans of their own. The essential aim of training is to make the trainee more aware of the active nature of learning and the importance of employing problem-solving, trouble-shooting routines to enhance understanding. If learners can be made aware of (1) basic strategies for reading and remembering, (2) simple rules of text construction, (3) differing demands of a variety of tests to which their information may be put, and (4) the importance of activating any background knowledge which they may have, they cannot help but become more effective learners. Such self-awareness is a prerequisite for self-regulation, the ability to orchestrate, monitor, and check one's own cognitive activities." (1981, p. 20)

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GROUP 1 Spanish L1 (N = 45)	GROUP 2 English L1 (N = 75)
------	Level 2 N = 39 (Spanish 140B)
Level 3 N = 8 (Intermediate Intensive ESL)	Level 3 N = 23 (Spanish 201A)
Level 4 N = 20 (Advanced Intensive ESL)	Level 4 N = 13 (Spanish 320)
Level 6 N = 17 (University - English Comp)	-----

FIGURE 1

Groups and Levels of Proficiency in the Second Language

	ENGLISH	SPANISH
Text Title:	Is English Degenerating?	Appendamos Idiomas
Structure:	Compare/Contrast	Problem/Solution
Length:	335 words	315 words
Grade Level:	10th Grade	10th Grade
Text Title:	Why Johnny Can't Write	Ingles: El Idioma Oficial de California
Structure:	Problem/Solution	Compare/Contrast
Length:	341 words	344 words
Grade Level:	15th Grade	12th Grade

FIGURE 2

Properties of Reading Texts

1) Confidence - 6 statements related to various aspects of a reader's perceived ability to read in the language.

E.g., "When reading silently in Spanish, I am able to recognize the difference between main points and supporting details."

2) Repair - 5 statements related to repair strategies a readers uses when comprehension fails.

E.g., "When reading silently in English, if I don't understand something, I keep on reading and hope for clarification further on."

3) Effective - 17 statements related to reading strategies the reader feels make the reading effective. Subcategorized into:

Sound-letter	(3 statements)
Word-meaning	(5 statements)
Text gist	(2 statements)
Background knowledge	(2 statements)
Content details	(2 statements)
Text organization	(2 statements)
Sentence syntax	(1 statement)

E.g., "When reading silently in Spanish the things I do to read effectively are to focus on the organization of the text."

4) Difficulty - 8 statements related to aspects of reading which make the reading difficult. Subcategorized into:

Sound-letter	(3 statements)
Word-meaning	(1 statement)
Text gist	(1 statement)
Background knowledge	(1 statement)
Content details	(1 statement)
Text organization	(1 statement)

E.g., "When reading silently in English, things that make the reading difficult are the grammatical structures."

FIGURE 3

Structure of the Metacognitive Questionnaire

		TEXT	
		ENGLISH	SPANISH
Grp 1 Spanish L1 (N=45)	Level 3 (N = 8)	5.31	7.88
	Level 4 (N = 20)	7.47	8.55
	Level 6 (N = 17)	7.68	8.47
		(7.17)	(8.40)
Grp 2 English L1 (N=75)	Level 2 (N = 39)	8.67	4.49
	Level 3 (N = 23)	8.96	6.83
	Level 4 (N = 13)	9.27	8.92
		(8.86)	(5.97)

TABLE 1

Descriptive Statistics - Mean Scores on Multiple-Choice Questions

	L2 Reading = L1 Reading + L2 Proficiency Level		
	(Model)		
Group 1 Spanish L1	F = 11.44 p = .0001 r2= .35	F = 15.64 p = .0003	F = 4.88 p = .0327
Group 2 English L1	F = 41.30 p = .0001 r2 = .53	F = 5.55 p = .0212	F = 66.09 p = .0001

TABLE 2

Regression Model
Second Language Reading as a Function of First Language Reading and Second Language Proficiency

Regression Model: L1 Reading = L1 Metacognition

Significant Regression Effects

	CONFIDENCE	REPAIR	EFFECTIVE	DIFFICULTY
Group 1 Spanish L1	---	---	-Sound letter -Sentence syntax -Word meaning -Content details	-Sound letter -Sentence syntax
Group 2 English L1	---	---	-Sound letter	

Regression Model: L2 Reading = L2 Metacognition

Significant Regression Effects

	CONFIDENCE	REPAIR	EFFECTIVE	DIFFICULTY
Group 1 Spanish L1	+Main/Support	-Give up/ stop reading	-Content details	-Background knowledge
Group 2 English L1	+Able to question author	-Give up/ stop reading	+Word meaning -Sound letter +Sentence syntax	-Sentence syntax

---

+ = positive relationship
The greater the subject's agreement with the metacognitive statement, the better the subject read in that language.

- = negative relationship
The greater the subject's disagreement with the metacognitive statement, the better the subject read in that language.

TABLE 3

Regression Model
Significant Regression Effects of Metacognitive Factors
on First and Second Language Reading

Model Statement: L1 Reading = L1 Metacognition

	EFFECTIVE	DIFFICULTY
Group 1 Spanish L1	ns	ns
Group 2 English L1	F = 4.55 p = .0363	ns

Model Statement: L2 Reading = L2 Metacognition

	EFFECTIVE	DIFFICULTY
Group 1 Spanish L1	ns	F = 6.32 p = .0158
Group 2 English L1	ns	ns

TABLE 4

Significant Effects of "Global" versus "Local" Readers' Perceptions
of Effective and Difficult Reading Strategies
on First and Second Language Reading